

CLAIMS

What is claimed is:

1. An orthopedic brace providing active resistance to axial rotation and translation in a joint comprising at least one circumferentially spiraling, length-adjustable bracing member having a proximal end (for positioning on one side of a joint), a distal end (for positioning on the other side of the joint along a longitudinal axis formed through the joint) and a circumferentially spiraling distance extending between said proximal end and said distal end defining a circumference oriented about the joint from said proximal end to said distal end, active resistance to axial rotation and translation of the joint being provided by a change in said circumference responsive to a change in the position of said proximal end relative to said distal end.
2. The orthopedic brace of claim 1 further comprising a bracing member support, said proximal end and said distal end being attached to said bracing member support.
3. The orthopedic brace of claim 2 wherein at least one of said proximal end or said distal end is releasably attached to said bracing member support.
4. The orthopedic brace of claim 2 wherein said bracing member support further comprises an undersleeve having a proximal edge and a distal edge, said proximal end of said bracing member being attached near said proximal edge and said distal end of said bracing member being attached near said distal edge.
5. An orthopedic brace providing active resistance to axial rotation and translation in a joint comprising:
an undersleeve sized to encircle at least a portion of a wearer's body and to extend from one side of a joint to the other side of the joint, said undersleeve having a

proximal edge positioned on one side of a joint and a distal edge positioned on the other side of the joint; and
at least one bracing member having a proximal end and a distal end attached to said undersleeve in proximity to said proximal edge of said undersleeve and said
5 distal edge of said undersleeve, respectively.

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6. The orthopedic brace of claim 5 wherein said undersleeve is formed of a material having a coefficient of elasticity and wherein said undersleeve further comprises a proximal portion positioned near said proximal edge of said undersleeve,
10 said proximal portion having a coefficient of elasticity lower than said coefficient of elasticity of said undersleeve.

7. The orthopedic brace of claim 6 wherein said proximal portion is sized to partially encircle said undersleeve and thereby provide an expansion gap
15 comprising material having a greater coefficient of elasticity than said coefficient of elasticity of said proximal portion.

8. The orthopedic brace of claim 6 further comprising a first stabilizing strap positioned in alignment with said proximal portion to encircle at least a portion
20 of said proximal portion.

9. The orthopedic brace of claim 6 wherein said undersleeve further comprises a distal portion positioned near said distal edge of said undersleeve, said distal portion having a coefficient of elasticity lower than said coefficient of elasticity
25 of said undersleeve.

10. The orthopedic brace of claim 9 wherein said distal portion is sized to partially encircle said undersleeve and thereby provide an expansion gap comprising

material having a greater coefficient of elasticity than said coefficient of elasticity of said distal portion.

5 *sub 11* 11. The orthopedic brace of claim 10 further comprising a second stabilizing strap positioned in alignment with said distal portion to encircle at least a portion of said distal portion.

10 *sub 12* 12. The orthopedic brace of claim 9 wherein at least one of said proximal portion or said distal portion is positioned and configured to serve as a bracing member support for attachment of said at least one bracing member thereto.

15 13. The orthopedic brace of claim 5 wherein said undersleeve further comprises a closeable opening extending from said proximal edge of said undersleeve toward said distal edge thereof.

14. The orthopedic brace of claim 13 wherein said closeable opening is a zipper.

20 15. The orthopedic brace of claim 13 further comprising at least one connecting device attached to said undersleeve and positioned in proximity to said closeable opening.

25 16. The orthopedic brace of claim 13 further comprising a stabilizing strap connected to said undersleeve in proximity to said proximal edge of said undersleeve and oriented to be positionable over said closeable opening to substantially fix the circumference of said undersleeve.

17. The orthopedic brace of claim 16 wherein said undersleeve further comprises a closeable opening extending from said distal edge thereof and further

comprising a stabilizing strap connected to said undersleeve in proximity to said distal edge of said undersleeve and oriented to be positionable over said closeable opening in said distal edge to substantially fix the circumference of said undersleeve.

5 18. An orthopedic brace for actively resisting axial rotation and translation in a joint comprising:

a first bracing member support for positioning on one side of a joint;

10 a second bracing member support for positioning on the other side of the joint and spaced from said first bracing member along a longitudinal axis formed through the joint;

15 at least one circumferentially spiraling bracing member having a first end for attachment to said first bracing member support and a second end for attachment to said second bracing member support, said first end having a securement structure connected thereto configured to maximize lateral vector forces acting on said first end.

20 19. The orthopedic brace of claim 18 further comprising a securement structure connected to said second end of said at least one bracing member configured to maximize lateral vector forces acting on said second end.

25 20. A method of limiting axial rotation and translation in a joint comprising:

providing an orthopedic brace configured to actively resist axial rotation and translation in a joint, said brace comprising a bracing member support and at least one circumferentially spiraling, length-adjustable bracing member having a proximal end for positioning on one side of a joint, a distal end for positioning on the other side of the joint along a longitudinal axis formed through the joint and a circumferentially spiraling distance extending between

positioning said orthopedic brace about a joint to extend said at least one bracing member from one side of the joint to the other side of the joint;

selectively adjusting said circumferentially spiraling distance by selectively adjusting the length of said length-adjusting bracing member between said proximal end and said distal end to provide active resistance to rotation and translation in the joint.

add

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